A Study on Innovative Pedagogical Integration of MOOCs, Online Certifications and Accounting Tools in Indian Accounting Education

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Abstract. In India Accounting education which include financial education, business education and accounting training is enduring Conversion, impacted by disruptive Technology, transnational educational resources and shifting market requirements. Lecture-based learning, while useful, failing to perform in furnishing the students with the digital readiness and professional competencies expected by companies. This Analysis looks on the modern instructional of Massive Open Online Courses (MOOCs), online certifications and financial management software in Indian accounting education.

The aim is to explore how modern resources can supplement lecture- based teaching, enhance carrier prospects and adhere to the NEP 2020 structure. A structured question sheet was circulated to 250 respondents; including students of accounting background and faculty those who teach them from key government universities and colleges which are affiliated to them in Bengaluru, to collect source data. The perspectives, acceptance levels and obstacles Assessed using various descriptive statistics and chi-square tests. In addition with the problems of digital infrastructure, curriculum integration, and acceptance of non-traditional credentials, the study highlights significant prospects in terms of improved employability, global exposure, and alignment with the National Education Policy (NEP) 2020). The outcomes exhibit that MOOCs, online certifications, and accounting software are effective supplements to lecture based learning rather than substitutes.

Keywords: Accounting Education, MOOCs, Online Certifications, Financial Management System, Bengaluru and National Education Policy.

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1. Introduction

Accounting has been considered as the "language of business," serving as the basis for financial reporting, regulatory compliance and decision-making (Needles & Powers, 2013). The emphasis on academic thought and Assessment -oriented teaching of accounting education in India has long existed, often creating a disconnect between academic understanding and operational needs (Bhasin, 2016). Due to this of there is a positive need for accounting graduates who are not just Academically sound but also technically advanced and prepared for the workforce, globalization, technological disruption and the complexity of financial systems (Velmurugan, 2019). Massive Open Online Courses (MOOCs), online certifications and accounting software programs are examples of forward-thinking mechanism that are developing revolutionary ways to close this gap. MOOCs are flexible, self-paced universally benchmarked courses that complement lecture based classroom instruction. In extremely competitive employment sector, digital professional certificates like those offered by ACCA, CMA and ICAI enable students gain related knowledge and improve their employability (Khan, 2020).

2. Literature Review

According to Sharma and Gupta (2018), the establishment of accounting software and tools like Tally, SAP, QuickBooks and data analytics platforms provides students with practical experience and the applied skills they need to be prepared for the workforce. NEP 2020 motivates the importance of digital integration, cross disciplinary approaches, and skill-based education in commerce and management area (Government of India, 2020). In spite of all these opportunities, channel persist in the form of limited digital infrastructure, inadequate teacher training, inelastic curricula, and a lack of official frameworks for MOOC credit transfer and digital certificates (Raj & Sinha, 2021). The ongoing study deals how MOOCs, online certificates, and accounting tools might be resourcefully Adopted in Indian accounting education. This study conducted to determine opportunities, obstacles, and favorable practices for creating a blended learning ecosystem that equips accounting professionals for the future by examining both primary and secondary data.

3. Methods

3.1 Statement of the Problem

In India Accounting education has traditionally been dominated by classroom instruction, theoretical frameworks, and exam-based grading. While this practice have been effective in transmitting Academic knowledge, it often fails to deliver the real world experience, digital skills, and universal perspectives required in today's work context. Employers are steadily looking for accounting graduates who are equipped not just in academic knowledge but also in the use of modern accounting tools, data analytics platforms, and universal norms of practice. The rise of Massive Open Online Courses (MOOCs), online certifications and advanced accounting software tools such as Tally, SAP, QuickBooks and data analytics programs has developed an opportunity to act as bridge between academic-industry skill gap.

Additionally the National Education Policy (NEP) 2020 highlights the combination of technology-enabled and skill-based learning in HEI. The evolution of MOOCs, online certifications and accounting tools into Indian accounting education is still moderately confined, even with these opportunities. Therefore, it is essential to investigate the innovative integration of MOOCs, online certificates, and accounting tools into accounting education in India. On top of that to increasing the standard of instruction and learning, determining the opportunities, problems, and best practices will prepare a workforce competent of meeting the ever-changing demands of the accounting industry.

3.2 Significance

- Students: This study highlights how MOOCs, online certifications, and accounting tools can enhance employability, practical skills, and global exposure.
- Faculties: Insights into inventive pedagogical practices that can supplement traditional teaching and align with NEP 2020.
- Institutions: This study helps universities and colleges understand the benefits and challenges of integrating digital tools into curricula.
- Industries: This study ensures that graduates are occupied with competencies required for professional accounting practice.

3.3 Objectives

1. To examine the extent of adoption of MOOCs, online certifications and accounting tools in Indian accounting education.
2. To analyze the perceptions of students and faculty regarding the effectiveness of these innovative pedagogical tools.
3. To evaluate the role of MOOCs and certifications in enhancing students' employability, professional competencies and global exposure.
4. To assess the impact of accounting tools on practical skill development and learning outcomes.

3.4 Hypotheses

Hypotheses 1:
H_0: MOOCs, online certifications and accounting tools are not significantly adopted in Indian accounting education.
H_1: MOOCs, online certifications and accounting tools are significantly adopted in Indian accounting education.

Hypotheses 2:
H_0: No significant difference in perceptions of students and faculty regarding the effectiveness of MOOCs, online certifications and accounting tools.
H_1: A significant difference in perceptions of students and faculty regarding the effectiveness of MOOCs, online certifications and accounting tools.

Hypotheses 3:
H_0: MOOCs, online certifications and accounting tools do not significantly enhance students' employability, professional competencies and global exposure.
H_1: MOOCs, online certifications and accounting tools significantly enhance students' employability, professional competencies and global exposure.

Hypotheses 4:
H_0: The use of accounting tools does not improve students' practical skill development and learning outcomes.
H_1: The use of accounting tools improves students' practical skill development and learning outcomes.

3.5. Research Design

The research adopts a descriptive and analytical research design. The descriptive approach is used to analyse the current status of adoption and perceptions, while the analytical approach is used to test hypotheses and analyze relationships through statistical techniques.

3.6. Data Sources

The study uses both secondary data and primary sources:

- Primary Data: Collected through structured question sheet related to students, and those who teach tem along with interview schedule for selected faculty members for interview.
- Secondary Data: this was collected from various Academic journals, published books related to this, institutional reports and government policies (e.g., NEP 2020) and previous studies which are connected to MOOCs, online certifications and accounting tools.

3.7. Sampling Design

- Population: Undergraduate and postgraduate students who are studying accounting/commerce/ related to commerce, and accounting faculties associated with higher-education institutions affiliated to government university in Bengaluru.
- Sampling Frame: Student and faculty respondents are taken from available sources from participating universities and related colleges.
- Sampling Technique: A Stratified random sampling method was adopted to collect Source data with proportional allocation of students and faculties and also ensured representation of all type of students who are aware of MOOC/ICT experience.
  - Sample Size and Number of respondents: in this study total sample of 250 respondents are considered where 200 students (from B. Com and M. Com programmes across selected institutions) and 50 faculty members (teaching accounting and commerce-related subjects).

  Allocation:
  - Bangalore University (50%) → 100 students + 25 faculty = 125

- Bengaluru City University (30%) → 60 students + 15 faculty = 75
- Bengaluru North University (20%) → 40 students + 10 faculty =50

Total= 250

3.8. Data Analysis

- Quantitative Data Analysis: The quantitative data from the structured questionnaires will be processed and analyzed using SPSS (Statistical Package for the Social Sciences) and Microsoft Excel.
- Qualitative Data Analysis: A Thematic analysis has been employed to identify patterns and themes emerging from the interview transcripts, providing high qualitative insights into the research topic.

3.9. Limitations

- It is confined to three public universities in Bengaluru, limiting generalizability.
- The size of sample may not fully represent the entire student and faculty population.
- Data is based on self-reported responses, which may involve personal bias.
- Only MOOCs, online certifications and accounting tools were considered, excluding other technologies.
- Time constraints restricted broader qualitative exploration and case studies.

4. Data Analysis and Interpretation

Table no 1: Showing demographic profile of the respondents

Type of Variable	Category	Frequency	Percentage (%)
Type of Respondent	Students	200	80
	Faculty	50	20
	Total	250	100
Gender	Male	132	52.8
	Female	118	47.2
	Total	250	100

University	Bangalore University	100	40
	Bengaluru City University	80	32
	Bengaluru North University	70	28
	Total	250	100

Source: Primary Data

The above table no 1 depicts the demographic data of the respondents provides useful insights into the composition of the sample. Out of the total 250 respondents, a majority were students (80%), while faculty members constituted 20%, ensuring representation from both learner and educator perspectives. In relation to gender distribution, the sample was correctly balanced, with males accounting for 52.8% and females 47.2%, indicating that responses reflect views across genders without significant bias. With respect to the university-wise distribution, Bangalore University contributed the highest share of respondents (40%), followed by Bengaluru City University (32%), and Bengaluru North University (28%). This proportionate sampling ensured that insights were drawn equitably from across the three major public universities in Bengaluru, thereby enhancing the generalizability of the study findings.

Table no 2: Showing the Adoption of MOOCs (Students + Faculty)

Response	Frequency	Percentage (%)
Very High	40	16
High	95	38
Moderate	70	28
Low	30	12
Very Low	15	6
Total	250	100

Source: Primary Data

The above table no 2 shows that a substantial proportion of respondents reported High adoption of MOOCs (38%), followed by Moderate adoption (28%). About 16% indicated Very High adoption, while only 12% and 6% reported Low and Very Low adoption, respectively. This clearly suggests that MOOCs are gaining considerable acceptance among students and faculty in accounting education, with the majority perceiving their usage at moderate to high levels.

Table no 3: Showing Mean Rank analysis of pedagogical innovations

Variable	Mean Score	Rank

Online Certifications & Employability	4.05	1
MOOCs Adoption	3.46	2
Accounting Tools Usage	3.27	3

Source: Primary Data

The above table no 3 mean rank analysis displays that Online Certifications and Employability (Mean = 4.05, Rank 1) are considered the most impactful pedagogical tool in Indian accounting education. This indicates that students and faculty perceive certifications from platforms are highly valuable for enhancing employability, professional competencies and global exposure. MOOCs Adoption (Mean = 3.46, Rank 2) stands as the second priority, reflecting their growing acceptance as supplementary learning tools. Accounting Tools Usage (Mean = 3.27, Rank 3) ranks lowest, suggesting that while practical tools (like Tally, SAP, QuickBooks) are necessary for skill development, their adoption in academic curricula is still limited compared to MOOCs and online certifications.

4. **Hypotheses Testing**

Hypotheses 1:

H_0: MOOCs, online certifications and accounting tools are not significantly adopted in Indian accounting education.
H_1: MOOCs, online certifications and accounting tools are significantly adopted in Indian accounting education.

Table no 4: Showing Chi-Square Goodness of Fit Test Results for MOOCs, Online Certifications, and Accounting Tools

Variable	$\chi^2(4, N=250)$	p-value	Interpretation
MOOCs Adoption	83	< .001	Significant adoption
Online Certifications	76.5	< .001	Significant adoption
Accounting Tools Adoption	89.2	< .001	Significant adoption

Source: Primary data

The above chi-square tests (table 4) reveals that the adoption of MOOC's, online certifications and accounting tools among the respondents significantly differ from the expected distribution. Especially MOOC's adoption χ^2 (4, N = 250) = 83, p < .001), online certifications χ^2 (4, N = 250) = 76.5, p < .001), and accounting tools adoption χ^2 (4, N = 250) = 89.2, p < .001) all show highly significant deviations, which suggests that the respondents exhibit a much higher adoption of these digital learning and professional tools than what would be expected by chance.

Hypotheses 2:

H_0: No significant difference in perceptions of students and faculty regarding the effectiveness of MOOCs, online certifications and accounting tools.

H_1: A significant difference in perceptions of students and faculty regarding the effectiveness of MOOCs, online certifications and accounting tools.

Table no 5: Showing the results of independent sample t test

Variable	Group	n	Average	SD	t-Value	p-value	Interpretations
Moocs	Students	200	4.1	0.62	4.32	< . 001	Significant Difference
	Faculty	50	3.65	0.7			
online Certifications	Students	200	4.2	0.58	3.89	< . 001	Significant Difference
	Faculty	50	3.8	0.7			
Accounting tools	Students	200	4.05	0.65	3.97	< . 001	Significant Difference
	Faculty	50	3.6	0.75			

Source: Primary data

It reveals that students perceive digital learning resources and accounting technologies to be more effective than faculty members do, highlighting a perceptual gap that suggests faculty may require further exposure, training, and confidence-building measures to fully adopt technology-enabled learning approaches in accounting education.

Hypotheses 3:

H_0: MOOCs, online certifications and accounting tools do not significantly enhance students' employability, professional competencies and global exposure.

H_1: MOOCs, online certifications and accounting tools significantly enhance students' employability, professional competencies and global exposure.

Table 6: Showing the results of One Sample T-test

variable	Mean Score	SD	t- Value	p-value	Result
Employability	4.18	0.64	25.75	< . 001	Significant
Professional Competencies	4.22	0.6	28.1	< . 001	Significant
Global Exposure	4.1	0.67	21.85	< . 001	Significant

Source: Primary data

The empirical results (table 6) revealed mean perception scores substantially higher than the test value of 3 on all three dimensions employability (M = 4.18), professional competencies (M = 4.22), and global exposure (M = 4.10). Each variable recorded statistically significant t-values with p <.001, indicating agreement among respondents regarding the positive influence of digital learning initiatives on student development. Hence, the null hypothesis (H_0) is rejected and the alternate hypothesis (H_3) is accepted, confirming that MOOCs, online certifications and accounting tools significantly contribute to enhancing employability skills, competency building and global exposure among commerce and accounting students.

Hypotheses 4:

H_0: The use of accounting tools does not improve students' practical skill development and learning outcomes.

H_1: The use of accounting tools improves students' practical skill development and learning outcomes.

Table 7: Showing the results of One Sample T-test

variable	Mean Score	SD	t- Value	p-value	Result
Practical Skill development	4.25	0.58	31.2	< . 001	Significant
Learning Outcomes	4.15	0.62	26.85	< . 001	Significant

Source: Primary data

Table 7 reveals that both practical skill development ($M = 4.25$, $t = 31.20$, $p < .001$) and learning outcomes ($M = 4.15$, $t = 26.85$, $p < .001$) were rated significantly above the neutral benchmark of 3 on a five-point scale. These findings confirm that the combining of accounting tools into the curriculum meaningfully enhances hands-on competency and overall academic performance. Therefore, the null hypothesis (H_0) is rejected and the alternate hypothesis (H_4) is accepted, indicating that accounting tools play a better role in strengthening experiential learning and preparing students to work in professional accounting environments.

5. Findings

Objective 1: To examine the extent of adoption of MOOCs, online certifications and accounting tools in Indian accounting education.

- Chi-square Goodness of Fit test indicates that MOOCs, online certifications, and accounting tools are significantly adopted across higher educational institutions.
- Respondent's majority indicated that these instruments have become an integral part of teaching–learning practices, particularly after the acceleration of digital learning trends.

Objective 2: To analyze the perceptions of students and faculty regarding the effectiveness of these innovative pedagogical tools.

- The ANOVA showed significant differences in perceptions between students and faculty. Students expressed stronger agreement regarding the benefits and necessity of digital tools, whereas faculty members acknowledged their usefulness but highlighted challenges relating to limited training and increased workload.

Objective 3: To evaluate the role of MOOCs and certifications in enhancing students' employability, professional competencies and global exposure.

- One-sample t-test findings confirmed that MOOCs and online certifications substantially enhance employability skills, professional competency development, and global exposure.

Respondents noted improved access to internationally benchmarked knowledge and industry-recognized credentials, contributing positively to career prospects.

Objective 4: To assess the impact of accounting tools on practical skill development and learning outcomes.

- Quantitative Outcomes indicated that accounting tools such as Tally, SAP–ERP, QuickBooks and Zoho Books significantly improve practical skill acquisition, conceptual clarity, and real-world accounting application.
- These tools were considered as bridge between the academic learning and industry anticipations

6. Suggestions

- Institutions should expand the Combination of MOOCs, online certifications, and accounting tools into conventional curricula instead of using them as optional add-ons.
- Universities should put joint efforts to establish coordination with MOOC providers (e.g., SWAYAM, Coursera, edX) and software vendors for student access at affordable rates.
- Regular Coaching and orientation programs related to field should be organized to improve faculty competency in using modern learning tools effectively.
- Institutions should start technical support units to help faculty for managing workload and reduce digital teaching stress.
    - Institutions should promote career-relevant certifications aligned with industry requirements, especially those endorsed by professional bodies like ICAI, ACCA, and CIMA.
    - Placement cells should motivate the students in selecting universally recognized certifications that enhance global job prospects.
    - Curriculum revisions should ensure that practical tool training (Tally, SAP-ERP, QuickBooks, Zoho Books) is included in the syllabus from earlier semesters.

- Assessment methods should prioritize hands-on assignments, case studies, simulations, and project-based evaluation using accounting tools.

7. Conclusions

The current study comes to the conclusion that, particularly in light of digitalisation and changing professional requirements, the incorporation of MOOCs, online certificates, and accounting tools has significantly changed accounting education in India. The results offer strong empirical proof that these technology-based learning interventions are frequently used in higher education institutions and are generally regarded as successful by teachers and students. By providing industry-relevant skills and broader learning access, MOOCs and online certificates have been shown to improve employment chances, professional competences, and global exposure. Similar to this, accounting software like Tally, SAP-ERP, QuickBooks, and Zoho Books have a significant positive influence on learning outcomes and the improvement of practical skills, filling the gap between academic knowledge and practical application. To conclude, the study emphasises the crucial of using innovative pedagogical techniques to modernise accounting education and prepare students for competitive, technology-driven employment in the global business environment.

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